

THE CLAIMS

1. Method of lengthy product surface treatment comprising lengthy product direct transporting through device for product surface treatment, in which there is liquid of higher level than input an output passages of the device, liquid flowing out through said passages being prevented, wherein

- device for surface treatment comprises tank with liquid connected by intake passage with camera for product surface treatment with input and output passages,
- for supplying the liquid through the intake passage, when liquid level is higher than input and output passages of the camera, pressure discharge in the camera for product surface treatment is created or pressure discharge in the camera for product surface treatment and excessive pressure in the tank are created at the same time,
- for preventing liquid flowing out the camera the following condition is maintained:

$P_{at} \geq P_1 + P_{m.col}$, where

P_{at} – atmospheric pressure,

P_1 – pressure in the camera for applying the coating,

$P_{m.col}$ – pressure of the melt column above the lower side of the passage.

2. Method according to the claim 1 wherein pressure differential

$$\Delta = P_{at} - (P_1 + P_{m.col})$$

is maintained on the constant level in the camera for applying the coating.

3. Method according to the claim 1 or 2 wherein one of the following materials is used as treating liquid: metal or alloy melt, melt or solution of organic or inorganic substances or their mixes.

4. Method according to any of the claims 1 - 3 wherein one of the following products is used as treated product: wire, bar, rolled product, band (ribbon), tube, filament, yarn, rope.

5. Method according to the claim 1 wherein surface treatment is applying the coating on the product surface; to accomplish it, lengthy product is transported directly through device for applying the coating, in which there is coating metal melt, the melt level is higher than input and output passages of the device; flowing out of liquid through said passages is prevented; device for surface treatment comprises tank with melt connected by intake passage with camera for product surface treatment with input and output passages made in walls of said camera, excessive pressure in the tank and pressure discharge in the camera for applying the coating being created to supply the melt through the intake passage into the camera so, that the melt level is higher than input and output passages of the camera, and the following condition is maintained for preventing liquid flowing out the camera:

$$P_{at} \geq P_1 + P_{m.col}, \text{ where}$$

P_{at} – atmospheric pressure,

P_1 – pressure in the camera for applying the coating,

$P_{m.col}$ – pressure of the melt column above the lower side of the passage.

6. Method according to the claim 5 wherein pressure differential

$$\Delta = P_{at} - (P_1 + P_{m.col})$$

is maintained on the constant level while applying the coating.

7. Method according to the claim 5 or 6 wherein melt of aluminum, or zinc, or their alloys, or tin, or lead is used as coating material.

8. Method according to any the claims 5 - 7 wherein one of the following products is used as lengthy product: wire, bar, rolled product, band (ribbon) or tube.

9. Line for applying the coating on lengthy product comprising supplying device, product surface preparing unit, device for applying the coating comprising tank with melt and camera for applying the coating with input and output passages followed by cooling camera and final product acceptance unit, wherein camera for applying the coating is provided in its lower part with intake vertical passage plunged into the melt, the camera for applying the coating and tank with melt being provided with inlet and outlet for creating pressure discharge and excessive pressure correspondingly in camera and tank.

10. Line according to the claim 9 wherein one of the following products is used as lengthy product on which the coating is applied: wire, bar, rolled product, steel band (stripe), tube.

11. Line according to the claim 9 or 10 wherein camera for applying the coating is placed under the tank with melt.

12. Line according to any of the claims 9 - 11 wherein the following condition is maintained in the camera for applying the coating:

$$P_{at} \geq P_1 + P_{m.col}, \text{ where}$$

P_{at} – atmospheric pressure,

P_1 – pressure in the camera for applying the coating,

$P_{m.col}$ – pressure of the melt column above the lower side of the passage.

13. Line according to the claim 9 wherein device for applying the coating is provided with mean for melt level control in the camera for applying the coating.

14. Line according to any of the claims 9 - 13 wherein input and output passages for treated lengthy product transporting are made in the side walls of camera for applying the coating.

15. Line according to any of the claims 9 - 14 wherein in the upper part of the wall or cover of the camera for applying the coating there is an offtake with outlet, through which pressure discharge in the hollow over the melt level of said camera is created, and in wall and cover of the tank there is an intake with inlet, through which excessive pressure in the hollow over the melt level of the tank is created.

16. Line according to any of the claims 9 - 15 wherein unit for product surface preparing comprises a device for mechanical cleaning of the surface.

17. Line according to the claim 16 wherein device for mechanical cleaning is a device for cleaning the rotating bodies, such as wire, tube or rolled product.

18. Line according to any of the claims 9 - 15 wherein unit for product surface preparing comprises a camera for thermal degreasing and a device for mechanical cleaning.

19. Line according to any of the claims 9 - 15 wherein unit for product surface preparing comprises a camera for thermo-chemical preparing of product surface.

20. Line according to any of the claims 9 – 19, which provided with a device for melt excesses removing placed in the outlet passage of the device for applying the coating.

21. Device for applying the coatings on lengthy products by plunging them into the melt comprising tank with melt and camera for applying the coating with input and output passages, wherein camera for applying the coating is provided in its lower part with intake vertical passage plunged into the tank with melt, the camera for applying the coating and tank with melt being provided with means for creating pressure discharge and excessive pressure correspondingly in camera and tank, and in the output passage and right after it there is a device for melt excesses removing from the surface of lengthy product.

22. Device according to the claim 21 wherein coated lengthy product is one of the following products: wire, bar, steel band (stripe), steel rolled product or tube.

23. Device according to any of the claims 21 - 22 wherein camera for applying the coating is placed above the tank with melt, and camera and tank are provided with melt heating means.

24. Device according to any of the claims 21 - 22 wherein in camera for applying the coating the following condition is maintained:

$$P_{at} \geq P_1 + P_{m.col}, \text{ where}$$

P_{at} – atmospheric pressure,

P_1 – pressure in the camera for applying the coating,

$P_{m.col}$ – pressure of the melt column above the lower side of the passage.

25. Device according to any of the claims 21 - 23 wherein device for applying the coating is provided with level control mean in the camera for applying the coating.

26. Device according to any of the claims 21 - 25 wherein in side walls of camera for applying the coating there are input and output passages for transporting the treated product.

27. Device according to any of the claims 21 - 25 wherein in the upper part of the wall or cover of the camera for applying the coating there is an outlet, through which pressure discharge in the hollow over the melt level of said camera is created, and in wall and cover of the tank there is an inlet, through which excessive pressure in the hollow over the melt level of the tank is created.

28. Device according to any of the claims 21-27, wherein the device for melt excesses removing from the surface of lengthy product is MGD-remover or gasket made from fireproof material.